

## **FISCAL YEAR 2011 APPROPRIATIONS REQUESTS FOR DELAWARE**

### **ANP Technologies, NIDS Handheld Common Identifier for Biological Agents**

ANP Technologies, Inc.

824 Interchange Blvd., Newark, DE 19711

\$4,000,000 for research, development, testing, and evaluation to develop a multiplexed handheld device for detection of a variety of biological warfare agent related bacteria and viruses. According to the Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism (released in December 2008), a biological attack is more likely to be used by terrorists than any other weapons of mass destruction in the near future. The proposed handheld common identifier for biological agents will allow war fighters to perform rapid, on-site biological agent tests during threat situations.

### **Civil Air Patrol, Operations**

Civil Air Patrol National Headquarters

Maxwell Air Force Base, AL

\$4,500,000 above the President's request to allow Civil Air Patrol to continue at current levels of operations across the country. The Civil Air Patrol is congressionally chartered to carry out the non-combatative missions of the U.S. Air Force in the United States through inland search and rescue, disaster relief, counter-drug missions, homeland security, aerospace education, and youth development. The proposed reduction in national funds will mean every state will lose some of its search and rescue capacity and see reductions in field support, cadet programs, and training sorties and exercises. The Delaware Wing membership includes 286 adults and 163 cadets and supports the Delaware Emergency Management Agency, County Emergency Operating Centers, the Delaware Department of Transportation, Dover Air Force Base, and other governmental agencies. Last year, the nine squadrons of the Delaware Wing flew over 1,000 state missions and provided 30,460 volunteer hours.

### **DAFB, Maintenance Hangar**

Dover Air Force Base

Dover, DE 19902

\$32,000,000 to construct a single bay, full-in C-5 and C-17 aircraft maintenance hangar with phased back shops wrapped around the facility to sustain home station and en route missions at Dover AFB. Dover AFB hauls more channel cargo than the rest of Air Mobility Command's airlift bases combined. Without a new completely covered maintenance hangar, during harsh weather Dover AFB will suffer from longer maintenance turn-around times and additional maintenance labor requirements, which may impact the base's mission.

### **DAFB, Security Forces Complex**

Dover Air Force Base

Dover, DE 19902

\$14,000,000 to construct a Security Forces Complex that is adequately sized and properly configured to support Security Forces base protection and mobility missions. A new facility can provide adequate storage for War Readiness materials, mobility equipment, armory for storage and issue of weapons and ammunition. Currently, the Dover Security Forces Facilities are the 2<sup>nd</sup> worst in the Air Mobility Command (AMC) due to deficiency in facility space and functional needs.

### **DANG, C-130 Aircraft Maintenance Shops – Air National Guard Project Phase III**

Delaware Air National Guard  
2600 Spruance Drive  
New Castle, DE 19720-1615

\$11,600,000 to replace the Delaware Air National Guard's engine maintenance shop, aircraft generation shop, aircraft maintenance unit shop area, and the non-destructive inspection shop area. With the higher operations tempo in recent years, the Guard's C-130 aircraft have supported regional, national, and global mission requirements which include providing air transportation for airborne forces, their equipment and supplies. Specifically, the aircraft of the Delaware Air National Guard also provide intra-theater airlift of personnel, equipment and supplies for tactical aeromedical evacuation within the theater of operations, as well as other inter-theater airlift of personnel and cargo. The ability to properly maintain the aircraft is critical to continue the effective support of these operations.

### **DNG, Counterdrug Task Force**

Delaware National Guard  
First Regiment Rd, Wilmington, DE 19808

\$300,000 above the President's request to provide counterdrug support to federal, state, and local law enforcement agencies and to Community Based Organizations requesting Drug Demand Reduction Assistance. Funding will provide unique military support and resources to our police agencies which enables the police to concentrate more police resources to other priorities in their department. This funding will provide the Delaware National Guard Counterdrug Program the ability to provide a criminal analyst to the FBI Task Force and provide for continued support to the Delaware Information Analysis Center sponsored by the Delaware State Police. It will also be used to sustain and expand the 6<sup>th</sup> grade Drug Education Program to more middle schools across the State of Delaware.

### **Delaware Valley Industrial Resource Center, STEM/Energy and Power Career (EPC) Development Initiative**

Delaware Valley Industrial Resource Center  
2905 Southampton Road, Philadelphia, PA

\$1,000,000 to expand National Defense Education Program (NDEP) activities focused on STEM in K-12 schools in the greater Philadelphia region, including Wilmington, Delaware. The overall goal of the NDEP at the Philadelphia Navy Yard is to increase career awareness and educational activity in grades K-12 that leads to more candidates, particularly women and minorities, for careers in Navy engineering and research. This funding will allow the Navy and the DVIRC to expand on their existing work and bring services to Wilmington, Delaware. The project will benefit the state of Delaware by bringing the knowledge and expertise of Navy scientists and engineers and businesspeople, and the programmatic and financial resources of the National Defense Education program into K-12 classrooms in Wilmington

and the Wilmington area. It will also connect the school district and its students and teachers to the multiple Power and Energy-related research, development, and educational initiatives taking place at the Philadelphia Navy Yard.

**Fraunhofer, Army Plant Vaccine Development Program**

Fraunhofer USA Center for Molecular Biotechnology  
9 Innovation Way, Suite 200, Newark, DE 19711

\$5,000,000 for research, development, testing, and evaluation to deliver a combined multivalent one-shot vaccine to protect the U.S. Armed Forces and civilian communities against plague and anthrax. This quick response ability can assist communities around the world with mass therapeutic treatment or for mass vaccination in the event of bioterrorist attack or natural disease outbreak such as an avian influenza.

**ILC Dover, Joint Services Aircrew Mask Don/Doff Inflight Upgrade**

ILC Dover LP  
One Moonwalker Road, Frederica, DE 19946-2080

\$2,000,000 for research, development, testing, and evaluation of a Joint Services Aircrew Mask, which will provide above the neck Chemical, Biological, and Anti-G protection to DoD aircrew personnel. The mask is a hood that can be put on and removed during flight that goes over the wearer's head and seals at the neck. Providing a don/doff capability to military aircrews will greatly enhance the mission capability while minimizing performance degradation in chemical and biological contaminated scenarios.

**INVISTA, Improved Thermal Resistant Nylon for Enhanced Durability and Thermal Protection in Combat Uniforms**

INVISTA S.à r.l.  
400 Woodland Road, Seaford, DE 19973

\$3,500,000 to increase the safety and protection of U.S. soldiers with improved flame resistant, durable, and lower cost materials for the U.S. Army combat uniforms. These improvements will meet an urgent need due to the threat of Improvised Explosives Devices (IED). This project will fund and accelerate research, development, testing, and evaluation for nylon fiber development, fiber formulation, fabric scale up and performance blend specification for U.S. Army combat uniforms.

**M Cubed Technologies, Technology for Lightweight Personnel Armor**

M Cubed Technologies  
1 Tralee Industrial Park, Newark, DE 19711

\$2,000,000 for research, development, testing, and evaluation to develop lighter weight body armor for soldiers and Marines that retains the ability to protect from multiple shots. Funding will assist development of advanced ceramics with novel geometric shapes that can reduce the body armor plate weight by 10 percent with potential for further weight reduction.

### **Quantum Leap, Treatment Decision Support for mild Traumatic Brain Injury (mTBI)**

Quantum Leap Innovations, Inc.

3 Innovation Way, Suite 100, Newark, DE 19711

\$3,500,000 for research, development, testing, and evaluation of a field deployable prototype composed of medically actionable, agent-based modeling, simulation and analysis environment and eye tracking goggles that enables field screening for mild Traumatic Brain Injury (mTBI). Current and future operations in Afghanistan and Iraq have resulted in considerable incidence of injuries that manifest as mTBI and Post Traumatic Stress Disorder (PTSD) – future, as yet undefined military operations, will likely result in similar injuries. The unique capabilities developed under this program will enable medical personnel to quickly screen newly injured warfighters for mTBI and determine potential interventions that will maximize recovery and minimize future harm.

### **Piasecki, Vectored Thrust Ducted Propeller (VTDP) Compound Helicopter Flight Demonstration Program**

Piasecki Aircraft Corporation

2nd Street West, Essington, PA 19029

\$4,000,000 to conduct flight demonstrations at New Castle County Airport in Delaware on the Vectored Thrust Ducted Propeller (VTDP) Compound Helicopter technology's potential to increase rotorcraft speed, range, and survivability. Current US combat and humanitarian operations in Afghanistan, Iraq, Pakistan, Philippines and many other remote areas require rotocraft capabilities well beyond those of existing fleet helicopters. By improving the speed, range, and survivability of the current helicopter fleet through technology insertion, there is an opportunity to address these capability gaps as part of ongoing recapitalization to the existing helicopter fleet.

### **Textronics, Garment-Based Physiological Monitoring Systems**

Textronics, Inc.

3825 Lancaster Pike, Suite 201, Wilmington, DE 19805

\$3,000,000 for research, development, testing, and evaluation of a new generation of wearable physiological-monitoring garments that will afford comfortable, accurate and real-time remote monitoring of a war fighter's heart rate, respiration, activity and other physiological parameters. The U.S. Army faces a critical need to determine real-time conditions (e.g. heart rate, respiration, activity, temperature, etc.) of the war fighter to address immediate medical attention needs and improve performance. The Army has requested such real-time physiological monitoring, which offers the capability to promptly detect and classify combat injuries and/or health problems.

### **University of Delaware, Advanced Composite Maritime Manufacturing**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$3,000,000 to research and develop design, engineering and manufacturing technologies for U.S. Navy ship structures based on advanced lightweight composite materials. The objective of this project is to keep Navy, SOCOM (Special Operations Command), and Coast Guard craft at the forefront of

technology, and help insure superiority of the US military in the water over current and future adversaries. The application of these materials and technologies will provide ship structures that are optimally engineered, and manufactured using state-of-the-art methods to provide the highest performance at the lowest cost.

#### **University of Delaware, Center for Advanced Magnetism**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$500,000 to establish a Center for Advanced Magnetism that would be the first in the United States and play the role of national center of excellence in the synthesis, characterization and testing of permanent magnets which are critical for our defense. The Center will promote, conduct and facilitate collaborative research and development on permanent magnets among the very few existing groups at universities, industrial institutions and government labs with the aim to resurrect and revive U.S. research and industry on permanent magnets and decrease our dependence on China which now has the monopoly in these strategic materials. Better permanent magnets support smaller, lighter, faster defense systems by increasing power density and reducing weight and size of not only the magnets but also leverage size reductions in surrounding components and enhancing affordability.

#### **University of Delaware, Composite Applied Research and Technology for Tactical Vehicle Survivability**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$4,500,000 to rapidly advance the Technology Readiness Level of existing and promising new ultra-lightweight composites structures and armor for combat and light, medium and heavy tactical vehicle applications. Using heavy materials such as steel and aluminum will continue to result in vehicles that are too heavy to transport and will overload vehicles - which reduces life, increases maintenance costs and requires more frequent vehicle replacement. The project is addressing the critical needs of the US Army to protect our soldiers and provide them with the best equipment to carry out their missions. Lightweight composite vehicle structures and armor increase mobility and mission payloads while increasing soldier protection against direct fire, improvised explosive devices and explosively formed penetrators.

#### **University of Delaware, Cybersecurity in Tactical Environments**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$1,500,000 for research, development, testing and evaluation to detect vulnerabilities and intrusions in the U.S. Army's battlefield networks. The Army uses mobile computer networks to both communicate between soldiers, and between soldiers and their weapons systems. This concept is called network centric warfare, and the security and availability of this network is critical to combat operations. Applications of the knowledge developed in this project will help protect our ground troops working in tactical battlefield environments by protecting their ability to communicate with each other and operate advanced networked devices such as Unmanned Aerial Vehicles, robots, sensors and weapon systems.

**University of Delaware, Millimeter Wave Imaging**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$1,900,000 for research, development, testing, and evaluation to develop real-time image enhancement technologies to improve the videos taken from next-generation millimeter-wave cameras. These cameras have the advantage of allowing U.S. soldiers to see in harsh conditions, including dust, fog, sand, and clouds. Millimeter wave imaging systems are able to image through smoke, fog, marine layer, blowing dust and sand, and fabric. The technology development is supported by the Office of Naval Research with the intent to deploy systems on military helicopters landing in harsh environments such as the “brownout” conditions faced when landing in the deserts of places such as Afghanistan and Iraq. It will also improve situational awareness of Naval vessels, particularly when close to the shore or at ports.

**University of Delaware, Multifunctional Technologies Alliance**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$10,000,000 to establish an Army-wide Multifunctional Materials Technologies Alliance (MTA) between the nine Army Research and Development Center’s (RDEC’s) of the U.S. Army Research, Development and Engineering Command (RDECOM) and the University of Delaware. This alliance will conduct basic and applied research in multifunctional materials, processing science, modeling, simulation, design and optimization, prototype fabrication, test and evaluation, electronics, networking and communication systems and multifunctional platform integration of interest to RDEC’s. This funding will establish a national laboratory housed in UD’s Technology Park, at the home of the recently closed Newark Chrysler Plant, to address the national security interests of our nation.

**University of Delaware, Persistent Surveillance Using Unmanned Millimeter Wave Imaging Platforms**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$1,600,000 for research, development, testing and evaluation of a millimeter-wave (mmW) imaging system mounted on unmanned aerial vehicle (UAV) platform for persistent surveillance and reconnaissance. Thanks to the ability of mmWs to penetrate dust, smoke, clouds, rain, sand, and ground up to a few inches, they are ideally suited for such tasks. The U.S. Army project will be carried out in close collaboration with the Office of Naval Research. By providing all-weather, persistent imagery of theater, the project will provide immediate battle damage assessment, situation awareness, and Intelligence, Surveillance, Reconnaissance capabilities. As a result, the ability to determine the actions and intentions of U.S. adversaries will be greatly improved.

**University of Delaware, Three Dimensional Virtual Environment for Medical Imaging and Surgical Simulation**

University of Delaware

Hullihen Hall, University of Delaware, Newark, DE 19716

\$1,500,000 to support a Three Dimensional Virtual Environment for Medical Imaging and Surgical Simulation. Such an environment combines leading edge technologies in the biological sciences, modeling physics, computational rendering, haptic feedback and visual display. Three dimensional virtual environments for medical imaging and surgical simulation are critical to the training and practice of future surgeons. Ultimately, these technologies will permit future surgeons to perform simulated surgical procedures on a patient's precise anatomy, derived from high-fidelity CT or MRI scans, prior to entering the operating room. Combined with robotic surgery equipment, the developed technologies will lead to the ability to perform life-saving surgical procedures remotely, e.g., battlefield treatment. These technologies are critical to the realization of remote surgical procedures for the treatment of battlefield wounded soldiers.

**W.L. Gore, Fire Resistant Environmental Ensemble (FREE)**

W.L. Gore & Associates

555 Paper Mill Rd., Newark, DE 19711

\$3,500,000 to provide the Army soldier with built-in protection from flame and heat threats present in combat conditions, while remaining highly functional in a spectrum of cold and wet weather climates. The FREE system is user-adaptable for field operations in rapidly evolving combat environments and protects the soldier from head to toe. It is designed specifically for aviation and combat vehicle crewmen, and utilizes advanced textile technologies in a range of garments, from lightweight base layers to weather-protecting outerwear.